

AMENDMENTS TO THE CLAIMS:

Claims 4, 5, 13 through 15, 17, 48, 55, 56, 58, 61, 62, 66 through 78, and 86 are canceled. Claims 19 through 23, 29 through 47, 49 through 51, 63, and 80 through 82 are withdrawn. Claims 1, 2, 3, 6 through 12, 16, 18 through 47, 49 through 54, 57, 59, 60, 63 through 65, and 79 through 85 have been amended herein. Please note that all claims currently pending and under consideration in the referenced application are shown below. Please enter these claims as amended. This listing of claims will replace all prior versions and listings of claims in the application.

Listing of Claims:

1. (Currently amended) An evaporator for a heat transfer system, the evaporator comprising:
a heated wall; wall having a heat-absorbing surface adjacent to a heat source;
a liquid barrier wall containing working fluid on an inner side of the liquid barrier wall, which
fluid flows only along the inner side of the liquid barrier wall;
a primary wick ~~positioned between~~ extending from a portion of the heated wall and the inner
side to a portion of the liquid barrier wall;
a vapor removal channel ~~that is~~ located at an interface between the primary wick and the heated
wall; and
a liquid flow channel located at an interface between the liquid barrier wall and the primary wick
~~and a secondary wick between the liquid flow channel and the primary wick.~~
2. (Currently amended) The evaporator of ~~claim 1~~ claim 1, further comprising
additional vapor removal channels located at the interface between the primary wick and the
heated wall.
3. (Currently amended) The evaporator of ~~claim 1~~ claim 1, further comprising
additional liquid flow channels located at the interface between the liquid barrier wall and the
primary wick.

4. (Canceled)

5. (Canceled)

6. (Currently amended) The evaporator of ~~claim 1~~ claim 1, wherein the vapor removal channel is formed in the heated wall ~~is defined so as to accommodate the vapor removal channel~~.

7 (Currently amended) The evaporator of ~~claim 6~~ claim 6, wherein the vapor removal channel is electro-etched into the heated wall.

8. (Currently amended) The evaporator of ~~claim 6~~ claim 6, wherein the vapor removal channel is machined into the heated wall.

9. (Currently amended) The evaporator of ~~claim 1~~ claim 1, wherein ~~the interface at the primary wick is defined so as to accommodate~~ a portion of the vapor removal channel is formed by the heated wall and another portion of the vapor removal channel is formed by the primary wick.

10. (Currently amended) The evaporator of ~~claim 9~~ claim 9, wherein the portion of the vapor removal channel is electro-etched into the heated wall.

11. (Currently amended) The evaporator of ~~claim 9~~ claim 9, wherein the portion of the vapor removal channel is machined into the heated wall.

12. (Currently amended) The evaporator of ~~claim 9~~ claim 9, wherein the vapor removal channel ~~is embedded within~~ formed in a surface of the primary wick ~~at the interface~~.

13 through 15. (Canceled)

16. (Currently amended) The evaporator of ~~claim 1~~ claim 1, wherein the liquid flow channel supplies the primary wick with liquid from a liquid inlet.

17. (Canceled)

18. (Currently amended) The evaporator of ~~claim 1~~ claim 1, further comprising:
additional vapor removal channels located at the interface between the primary wick and the heated wall; and
additional liquid flow channels located between the liquid barrier wall and the primary wick;
wherein the number of vapor removal channels is higher than the number of liquid flow channels.

19. (Withdrawn and Currently amended) The evaporator of ~~claim 1~~ further comprising claim 1, further comprising:
a secondary wick disposed between the liquid flow channel and the primary wick; and
a vapor vent channel at an interface between the secondary wick and the primary wick.

20. (Withdrawn and Currently amended) The evaporator of ~~claim 19~~ claim 19, wherein vapor bubbles formed within the vapor vent channel are swept through the secondary wick and through the liquid flow channel.

21. (Withdrawn and Currently amended) The evaporator of ~~claim 19~~ claim 19, wherein the vapor vent channel delivers vapor that has vaporized within the primary wick ~~near~~ at a location proximate to the interface between the primary wick and the liquid barrier wall away from the primary wick.

22. (Withdrawn and Currently amended) The evaporator of ~~claim 1~~ claim 19, wherein the secondary wick is a mesh screen.

23. (Withdrawn and Currently amended) The evaporator of ~~claim 1~~ claim 19, wherein the secondary wick is a slab wick.
24. (Currently amended) The evaporator of ~~claim 1~~ wherein the heated wall and the liquid barrier wall are capable of withstanding internal pressure of the working fluid. claim 1, wherein the primary wick, the heated wall, and the liquid barrier wall are annular and coaxial.
25. (Currently amended) The evaporator of ~~claim 1~~ claim 24, wherein ~~the primary wick, the heated wall, and the liquid barrier wall are annular and coaxial such that the heated wall is disposed inside the primary wick, which is disposed inside the liquid barrier wall.~~
26. (Currently amended) The evaporator of ~~claim 1~~ claim 1, wherein the vapor removal channel is thermally segregated from the liquid flow channel.
27. (Currently amended) The evaporator of ~~claim 1~~ claim 1, wherein the liquid barrier wall ~~is equipped with~~ comprises fins disposed on an outer surface of the liquid barrier wall that cool a liquid side of the evaporator.
28. (Currently amended) The evaporator of ~~claim 1~~ claim 1, wherein the liquid barrier wall is cooled by passing liquid across an outer surface of the liquid barrier wall.

29. (Withdrawn and Currently amended) A heat transfer system comprising:
an evaporator including:
a heated ~~wall~~; wall having a heat-absorbing surface adjacent to a heat source;
a liquid barrier wall containing working fluid on an inner side of the liquid barrier wall,
which fluid flows only along the inner side of the liquid barrier wall;
a primary wick ~~positioned between~~ extending from a portion of the heated wall and the
inner side to a portion of the liquid barrier wall;
a vapor removal channel ~~that is~~ located at an interface between the primary wick and the
heated wall, the vapor removal channel extending to a vapor outlet; and
a liquid flow channel located at an interface between the liquid barrier wall and the
primary wick, the liquid flow channel receiving liquid from a liquid inlet; ~~and~~
~~a secondary wick between the liquid flow channel and the primary wick~~;
a condenser having a vapor inlet and a liquid outlet;
a vapor line providing fluid communication between the vapor outlet and the vapor inlet; and
a liquid return line providing fluid communication between the liquid outlet and the liquid inlet.

30. (Withdrawn and Currently amended) The heat transfer system of ~~claim 29~~
claim 29, wherein the liquid barrier wall of the evaporator ~~is equipped with~~ comprises heat
exchange fins disposed on an outer surface of the liquid barrier wall.

31. (Withdrawn and Currently amended) The heat transfer system of ~~claim 29~~
claim 29, further comprising a reservoir in the liquid return line.

32. (Withdrawn and Currently amended) The heat transfer system of ~~claim 31~~
claim 31, wherein the evaporator ~~comprises~~ further comprises:
a secondary wick disposed between the liquid flow channel and the primary wick; and
a vapor vent channel at an interface between the secondary wick and the primary wick.

33. (Withdrawn and Currently amended) The heat transfer system of ~~claim 32~~ claim 32, wherein vapor bubbles formed within the vapor vent channel are swept through the secondary wick, through the liquid flow channel, and into the reservoir.

34. (Withdrawn and Currently amended) The heat transfer system of ~~claim 32~~ claim 32, wherein the vapor vent channel delivers vapor that has vaporized within the primary wick ~~near~~ at a location proximate to the interface between the primary wick and the liquid barrier wall away from the primary wick and into the reservoir.

35. (Withdrawn and Currently amended) The heat transfer system of ~~claim 31~~ claim 31, wherein vapor bubbles are vented into the reservoir from the evaporator.

36. (Withdrawn and Currently amended) The heat transfer system of ~~claim 31~~ claim 31, wherein the reservoir is cold biased.

37. (Withdrawn and Currently amended) The heat transfer system of ~~claim 29~~ claim 29, wherein the evaporator is planar.

38. (Withdrawn and Currently amended) The heat transfer system of ~~claim 29~~ claim 29, wherein the evaporator is annular such that the heated wall is inside the primary wick, which is inside the liquid barrier wall.

39. (Withdrawn and Currently amended) The heat transfer system of ~~claim 29~~ claim 29, wherein liquid returning into the evaporator from the condenser is subcooled by the condenser.

40. (Withdrawn and Currently amended) The heat transfer system of ~~claim 39~~ claim 39, wherein an amount of subcooling produced by the condenser balances heat leakage through the primary wick.

41. (Withdrawn and Currently amended) The heat transfer system of ~~claim 39~~
claim 39, further comprising a reservoir in the liquid return line.

42. (Withdrawn and Currently amended) The heat transfer system of ~~claim 41~~
claim 41, wherein subcooling maintains a thermal balance within the reservoir.

43. (Withdrawn and Currently amended) The heat transfer system of ~~claim 41~~
claim 41, wherein the liquid return line enters the evaporator through the reservoir.

44. (Withdrawn and Currently amended) The heat transfer system of ~~claim 41~~
claim 41, wherein the reservoir is formed adjacent the liquid barrier wall of the evaporator.

45. (Withdrawn and Currently amended) The heat transfer system of ~~claim 41~~
claim 41, wherein the reservoir is formed between the liquid barrier wall and the primary wick of
the evaporator.

46. (Withdrawn and Currently amended) The heat transfer system of ~~claim 41~~
claim 41, wherein the reservoir is formed as a separate vessel that communicates with the liquid
inlet of the evaporator.

47. (Withdrawn and Currently amended) The heat transfer system of ~~claim 41~~
claim 41, wherein the reservoir ~~is equipped with~~ comprises fins disposed on an outer surface of
the reservoir that cool the reservoir.

48. (Canceled)

49. (Withdrawn and Currently amended) The heat transfer system of ~~claim 29~~
claim 29, wherein the heated wall contacts a hot side of a Stirling cooling machine.

50. (Withdrawn and Currently amended) The heat transfer system of ~~claim 29~~ claim 29, wherein the liquid flow channel is fed with liquid from a reservoir located above the primary wick.

51. (Withdrawn and Currently amended) The heat transfer system of ~~claim 50~~ claim 50, wherein the liquid barrier wall is cold biased.

52. (Currently amended) An evaporator for a heat transfer system, the evaporator comprising:
a heated wall having an annular ~~shape~~; shape and a heat-absorbing surface adjacent to a heat source;
a liquid barrier wall having an annular shape and being coaxial with the heated wall;
a primary wick ~~positioned between~~ extending from a portion of the heated wall and to a portion of the liquid barrier wall and being coaxial with the heated wall; and
~~a secondary wick between the heated wall and the primary wick. a vapor removal channel located at an interface between the primary wick and the heated wall; and~~
a liquid flow channel located at an interface between the liquid barrier wall and the primary wick.

53. (Currently amended) The evaporator of ~~claim 52~~ claim 52, wherein the heated wall is inside the primary wick, which is inside the liquid barrier wall.

54. (Currently amended) The evaporator of ~~claim 52~~ claim 52, further comprising a subcooler adjacent the liquid barrier wall.

55. (Canceled)

56. (Canceled)

57. (Currently amended) The evaporator of ~~claim 56~~ claim 56, wherein the liquid flow channel supplies the primary wick with liquid from a liquid inlet.

58. (Canceled)

59. (Currently amended) The evaporator of ~~claim 52~~ claim 52, wherein the vapor removal channel is formed in the heated wall ~~is defined so as to accommodate a vapor removal channel~~.

60. (Currently amended) The evaporator of ~~claim 52~~ claim 52, wherein the vapor removal channel is formed in a portion of an interface between the primary wick and a portion of the heated wall ~~accommodates a vapor removal channel~~.

61. (Canceled)

62. (Canceled)

63. (Withdrawn and Currently amended) The evaporator of ~~claim 52~~ further comprising claim 52, further comprising:
a secondary wick disposed between the liquid flow channel and the primary wick; and
a vapor vent channel at an interface between the secondary wick and the primary wick.

64. (Currently amended) The evaporator of ~~claim 52~~ wherein the heated wall and the liquid barrier wall are capable of withstanding internal pressure of the working fluid; claim 52,
wherein the vapor removal channel is formed in the primary wick.

65. (Currently amended) The evaporator of ~~claim 52~~ claim 52, wherein the liquid barrier wall ~~is equipped with~~ comprises fins disposed on an outer surface of the liquid barrier wall that cool a liquid side of the evaporator.

66. through 78. (Canceled)

79. (Currently amended) A method of transferring heat, the method comprising:
~~inputting applying~~ heat energy ~~onto an exterior to a~~ heat-absorbing surface of a ~~vapor barrier~~
heated wall;
flowing liquid through a liquid flow channel that is defined at an interface between a liquid
barrier wall and a primary wick;
pumping the liquid from the liquid flow channel through ~~a the~~ primary wick ~~positioned between~~
extending from a portion of the liquid barrier wall and to a portion of the vapor barrier
heated wall; and
evaporating at least some of the liquid at a vapor removal channel ~~that is defined at an interface~~
between the primary wick and the ~~vapor barrier wall~~; and
~~delivering vapor formed near or within the liquid flow channel away from the primary wick.~~
heated wall.

80. (Withdrawn and Currently amended) The method of ~~claim 79 wherein delivering~~
~~vapor formed near or within the liquid flow channel includes~~ claim 79, further comprising
~~delivering the vapor formed in the primary wick proximate to the liquid flow channel~~ through a
vapor vent channel disposed at an interface between a secondary wick and the primary wick.

81. (Withdrawn and Currently amended) The method of ~~claim 80~~ claim 80, wherein
~~delivering vapor formed near or within the liquid flow channel includes~~ delivering vapor formed
in the primary wick proximate to the liquid flow channel comprises sweeping vapor bubbles
formed within the vapor vent channel through the secondary wick and through the liquid flow
channel.

82. (Withdrawn and Currently amended) The method of ~~claim 80~~ claim 80, wherein ~~delivering vapor formed near or within the liquid flow channel includes~~ delivering vapor formed in the primary wick proximate to the liquid flow channel comprises delivering vapor that has vaporized within the primary wick ~~near~~ at a location proximate to the interface between the primary wick and the liquid barrier wall away from the primary wick.

83. (Currently amended) The method of ~~claim 79~~ claim 79, further comprising ~~reducing leakage of heat from the vapor barrier wall, through the primary wick, toward the liquid barrier wall.~~ cooling the liquid within the liquid flow channel with fins disposed on an outer surface of the liquid barrier wall.

84. (Currently amended) The method of ~~claim 79~~ claim 79, further comprising ~~ensuring vapor flow generated within the vapor removal channel at the interface between the primary wick and the vapor barrier wall without a significant pressure drop.~~ wherein pumping the liquid from the liquid flow channel through the primary wick comprises pumping the liquid from the liquid flow channel through the primary wick having an annular shape.

85. (Currently amended) The method of ~~claim 79~~ claim 79, wherein pumping the liquid through the primary wick ~~includes~~ comprises supplying the primary wick with ~~enough~~ additional liquid to offset the liquid vaporized at the interface between the primary wick and the vapor barrier ~~heated~~ wall and the liquid vaporized at the liquid barrier wall.

86. (Canceled)